

IN THE CLAIMS:

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Claim 1. (Currently Amended) An electroporation assembly comprising:
a singular container having a distal opening for positioning in close proximity to at least one cell without penetrating a cell membrane, the container configured to receive a conductive fluid including a substance;
a first electrode having at least a portion configured to be disposed within the container and in direct electrical communication with the conductive fluid; and
a second electrode positioned in proximity to the distal opening for creating an electric field between the electrodes, wherein
an electrical signal can pass through the conductive fluid and the cell allowing said substance to pass through the distal opening and enter the cell through pores in the cell, wherein said electrical signal includes changeable voltage parameters and opens the pores.

Claim 2. (Original) An electroporation assembly according to claim 1 wherein the container is selected from the group consisting of pipette, buret and syringe.

Claim 3. (Original) An electroporation assembly according to claim 2 wherein the pipette is a micropipette.

Claim 4. (Original) An electroporation assembly according to claim 3 wherein the micropipette is a glass pulled pipette having a sharp tip opening having a diameter less than the diameter of a target cell.

Claim 5. (Original) An electroporation assembly according to claim 1 further comprising a tissue support for maintaining a cell, tissue or an organism between the distal opening and the second electrode.

Claim 6. (Original) An electroporation assembly according to claim 1 further comprising a power supply.

Claim 7. (Original) An electroporation assembly according to claim 6 wherein the power supply is a periodic pulse generator.

Claim 8. (Original) An electroporation assembly according to claim 1 wherein the first and second electrodes are independently made of a conductive material selected from the group consisting of silver, copper, stainless steel, aluminum, platinum, gold, carbon and alloys thereof.

Claim 9. (Currently Amended) A method for delivering a substance into a cell said method comprising:

providing a singular container having a distal opening;

placing a conductive fluid including a substance in the container;

placing the distal opening in proximity to the cell without penetrating a cell membrane;

and

causing an electrical signal to pass through the conductive fluid and the cell, said electrical signal having changeable voltage parameters, wherein electrical signal opens pores in the cell and the substance passes through the distal opening and enters the cell through the pores.

Claim 10. (Original) A method for delivering a substance into a cell according to claim 9 wherein the container is selected from the group consisting of pipette, buret and syringe.

Claim 11. (Original) A method for delivering a substance into a cell according to claim 10 wherein the pipette is a micropipette.

Claim 12. (Original) A method for delivering a substance into a cell according to claim 11 wherein the micropipette is a glass pulled pipette having a sharp tip opening having a diameter less than the diameter of the cell.

Claim 13. (Original) A method for delivering a substance into a cell according to claim 9 wherein the electrical signal passes between first and second electrodes, the first electrode having at least a portion thereof disposed within the container and in direct electrical communication with the conductive fluid.

Claim 14. (Original) A method for delivering a substance into a cell according to claim 9 wherein the cell is in direct contact with the distal opening.

Claim 15. (Original) A method for delivering a substance into a cell according to claim 9 wherein the substance is selected from the group consisting of nucleic acid, dye, protein, antibody, antigen, peptide, metal, pharmaceutical compound, a radiolabeled derivative of the foregoing and combinations thereof.

Claim 16. (Original) A method for delivering a substance into a cell according to claim 15 wherein the nucleic acid is contained in a vector.

Claim 17. (Original) A method for delivering a substance into a cell according to claim 15 wherein the dye is a fluorochrome.

Claim 18. (Original) A method for delivering a substance into a cell according to claim 15 wherein the protein is a fluorochrome.

Claim 19. (Original) A method for delivering a substance into a cell according to claim 18 wherein the protein is green fluorescent protein or a red shifted mutant thereof.

Claim 20. (Original) A method for delivering a substance into a cell according to claim 15 wherein the nucleic acid is a nucleic acid encoding a fluorescent protein.

Claim 21. (Original) A method for delivering a substance into a cell according to claim 20 wherein the fluorescent protein is green fluorescent protein or a color shifted mutant thereof.

Claim 22. (Original) A method for delivering a substance into a cell according to claim 9 wherein the electrical signal is generated by a periodic pulse generator.

Claim 23. (Original) A method for delivering a substance into a cell according to claim 22 wherein the electrical signal is a square pulse.

Claim 24. (Original) A method for delivering a substance into a cell according to claim 23 wherein the electrical signal is a high frequency train of square pulses.

Claim 25. (Original) A method for delivering a substance into a cell according to claim 22 wherein the electrical signal is an exponential decay pulse.

Claim 26. (Original) A method for delivering a substance into a cell according to claim 9 wherein the cell is a neuron.

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Claim 27. (Original) A method for delivering a substance into a cell according to claim 9 wherein the cell is a brain cell selected from the group consisting of neuron and glial cell.

Claim 28. (Original) A method for delivering a substance into a cell according to claim 9 wherein the method is conducted *in vivo*.

Claim 29. (Original) A method for delivering a substance into a cell according to claim 9 wherein the method is conducted *in vitro*.
